REMARKS

In the Office Action, the Examiner rejected claims 1-3, 8-9, 14, 21-22 and 25-26 under 35 U.S.C. § 102 as being anticipated by United States Patent 6,944,224, issued to Zhao, et al. ("Zhao"). The Examiner also rejected claims 4-5, 10-11, 15-17, 23 and 29-30 under 35 U.S.C. § 103 as being unpatentable over Zhao in view of United States Patent 7,003,038, issued to Divakaran, et al. ("Divakaran"). The Examiner objected to claims 6-7, 12-13, 18-20, 24 and 27-28 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants have amended claims 1, 2, 6, 8, 12, 14-15, 17-19, 21-25 and 27-29. Applicants have added new claims 31-57. Applicants have canceled claims 9-11, 26 and 30. Applicants do not surrender any equivalents. Accordingly, claims 1-8, 12-25, 27-29 and 31-57 are currently pending in this application.

I. Rejection of claims 1-5 under 35 U.S.C. §§ 102 or 103

In the Office Action, the Examiner rejected claims 1-3 under 35 U.S.C. §102 as being anticipated by Zhao. The Examiner also rejected claims 4-5 under 35 U.S.C. § 103 as being unpatentable over Zhao in view of Divakaran. Claims 2-5 depend directly or indirectly on claim 1.

Claim 1 recites a method of processing several frames to determine a number of bidirectional motion compensated (B) frames to be encoded in a set of successive frames in the several frames. The method computes motion vectors for at least one frame in the set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame. The method determines a motion cost value for at least one frame in the set of successive frames. The method determines a derived cost value

based on the motion cost value for at least one frame in the set of successive frames. The method determines the number of B-frames to be encoded in the set of successive frames based on the derived cost value.

Applicants respectfully submit that Zhao does not disclose, teach, or suggest the method of claim 1. Specifically, Zhao do not describe a method that determines a number of B-frames for a sequence of frames by using motion vectors that are only based on a particular frame and a preceding frame. In the Office Action, the Examiner cites several sections of Zhao as describing the claimed method. However, these cited sections of Zhao merely describe a method that encodes a sequence of frames by analyzing each frame in the sequence of frames to determine whether to encode the frame as an I, P or B frame. *See* Zhao, column 2, lines 16-24; *see* also column 11, lines 30-57; *see* also Figures 17 and 18.

The cited sections of Zhao do not describe computing only motion vectors for P-frames and computing a number of B-frames based only on the motion vectors for the P-frames.

In contrast, claim 1 recites a method that (a) computes motion vectors for at least one frame in the set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame and (b) determines a number of B-frames to be encoded in the set of successive frames based on the derived cost value.

Thus, the cited reference does not render claim 1 unpatentable under 35 U.S.C. § 102. As claims 2-5 are dependent directly or indirectly on claim 1, Applicants respectfully submit that claims 2-5 are patentable over the cited references for at least the reasons that were discussed above in relation to claim 1. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the §§ 102 and 103 rejections of claims 1-5.

II. Rejection of claims 8 and 14 under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 8 and 14 under 35 U.S.C. §102 as being anticipated by Zhao. Claim 14 depends on claim 8.

Claim 8 recites a method of encoding a video sequence in two passes. The video sequence includes several frames. The method performs a first pass of operations on a set of successive frames of the several frames. The first pass of operations includes computing motion vectors for at least one frame in the set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame. The first pass of operations includes determining a motion cost value for at least one frame in the set of successive frames. The first pass of operations includes determining a derived cost value based on the motion cost value for at least one frame in the set of successive frames. The first pass of operations includes determining a number of bidirectional motion compensated (B) frames to be encoded in the set of successive frames based on the derived cost value. The method performs a second pass of operations on the set of successive frames. The second pass of operations includes encoding the determined number of frames in the set of successive frames as B-frames by using at least one motion vector computed in the first pass of operations.

Applicants respectfully submit that Zhao does not disclose, teach, or suggest the method of claim 8. Specifically, Zhao do not describe a method that determines a number of B-frames for a sequence of frames by using motion vectors that are only based on a particular frame and a preceding frame. In the Office Action, the Examiner cites several sections of Zhao as describing the claimed method. However, these cited sections of Zhao merely describe a method that encodes a sequence of frames by analyzing each frame in the sequence of frames to determine whether to encode the frame as an I, P or B frame. *See* Zhao, column 2, lines 16-24; *see* also column 11, lines 30-57; *see* also Figures 17 and 18.

The cited sections of Zhao do not describe computing only motion vectors for P-frames and computing a number of B-frames based only on the motion vectors for the P-frames.

In contrast, claim 8 recites a method that performs a first pass of operations that includes (a) computing motion vectors for at least one frame in a set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame, and (b) determining a number of bidirectional motion compensated (B) frames to be encoded in the set of successive frames based on the derived cost value.

Thus, the cited reference does not render claim 8 unpatentable under 35 U.S.C. § 102. As claim 14 is dependent on claim 8, Applicants respectfully submit that claim 14 is patentable over the cited reference for at least the reasons that were discussed above in relation to claim 8. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the § 102 rejection of claims 8 and 14.

III. Rejection of claims 15-17 under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 15-17 under 35 U.S.C. §103 as being unpatentable over Zhao in view of Divakaran. Claim 16-17 depend on claim 15. Claim 15 recites a method of detecting scene cuts in a video sequence that includes several frames. The method computes motion vectors for a first frame and a second frame in the several frames. The method determines a motion cost value for the computed motion vectors of the first frame and the second frame. The method determines a ratio between the motion cost value for the computed motion vectors of the first frame and the motion cost value for the computed motion vectors of the second frame. The method determines if there is a scene cut between the first frame and the second frame based on the ratio.

Applicants respectfully submit that Zhao, Divakaran or their combination does not disclose, teach, or suggest the method of claim 15. Specifically, Zhao, Divakaran or their

combination does not disclose a method that (a) determines a motion cost value for computed motion vectors of a first frame and a second frame, and (b) determines if there is a scene cut between the first frame and the second frame based on a ratio, as recited in claim 15.

In the Office Action, the Examiner cites several paragraphs of Zhao and Divakaran as describing the claimed method. However, the cited paragraphs of Zhao merely describe a method of determining a scene cut by looking at motion activity of two frames. *See* Zhao, column 30, lines 32-39. *Zhao defines motion activity as a measure of the luminance of a frame*. *See* Zhao, column 15, lines 28-30. Zhao does not define motion activity to mean anything else. Thus, Zhao does not describe a method that determines a scene cut by looking at costs associated with motion vectors.

The cited paragraphs of Divakaran describe a method of determining a scene cut by looking at the *number* of frames that do not have motion vectors and the total *number* of frames. *See* Divakaran, column 7, line 33 to column 8, line 23. Divakaran does not describe determining a scene cut based on motion cost values for motion vectors. In addition, neither reference describes a ratio that is based on motion cost values for motion vectors.

Moreover, Applicants respectfully submit that the Examiner has not provided any proper motivation or suggestion to combine the two cited references.

Thus, the cited references does not render claim 15 unpatentable under 35 U.S.C. § 103. As claims 16-17 are dependent on claim 15, Applicants respectfully submit that claims 16-17 are patentable over the cited references for at least the reasons that were discussed above in relation to claim 15. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the § 103 rejection of claims 15-17.

IV. Rejection of claim 21-23 under 35 U.S.C. §§ 102 or 103

In the Office Action, the Examiner rejected claims 21-22 under 35 U.S.C. §102 as being anticipated by Zhao. The Examiner also rejected claim 23 under 35 U.S.C. § 103 as being unpatentable over Zhao in view of Divakaran. Claims 22-23 depend directly or indirectly on claim 21.

Claim 21 recites a computer readable medium storing a computer program for processing a video sequence that include several frames to determine a number of bidirectional motion compensated (B) frames to be encoded in a set of successive frames in the several frames. The computer program is executable by at least one processor. The computer program includes sets of instructions for computing motion vectors for at least one frame in the set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame. The computer program includes sets of instructions for determining a motion cost value for at least one frame in the set of successive frames. The computer program includes sets of instructions for determining a derived cost value based on the motion cost value for at least one frame in the set of successive frames. The computer program includes sets of instructions for determining the number of B-frames to be encoded in the set of successive frames based on the derived cost value.

Applicants respectfully submit that Zhao does not disclose, teach, or suggest the computer readable medium of claim 21. Specifically, Zhao do not describe a method that determines a number of B-frames for a sequence of frames by using motion vectors that are only based on a particular frame and a preceding frame. In the Office Action, the Examiner cites several sections of Zhao as describing the claimed method. However, these cited sections of Zhao merely describe a method that encodes a sequence of frames by analyzing each frame in the

sequence of frames to determine whether to encode the frame as an I, P or B frame. *See* Zhao, column 2, lines 16-24; *see* also column 11, lines 30-57; *see* also Figures 17 and 18.

The cited sections of Zhao do not describe computing only motion vectors for P-frames and computing a number of B-frames based only on the motion vectors for the P-frames.

In contrast, claim 21 recites a computer readable medium that stores a computer program that includes sets of instructions for (a) computing motion vectors for at least one frame in the set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame and (b) determining a number of B-frames to be encoded in the set of successive frames based on the derived cost value.

Thus, the cited reference does not render claim 21 unpatentable under 35 U.S.C. § 102. As claims 22-23 are dependent directly or indirectly on claim 21, Applicants respectfully submit that claims 22-23 are patentable over the cited references for at least the reasons that were discussed above in relation to claim 21. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the §§ 102 and 103 rejections of claims 21-23.

V. Rejection of claim 25 under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claim 25 under 35 U.S.C. § 102 as being anticipated by Zhao. Claim 25 recites a computer readable medium storing a computer program for encoding a video sequence in two passes. The video sequence includes several frames. The computer program is executable by at least one processor. The computer program includes a set of instructions for performing a first pass of operations on a set of successive frames of the several frames. The first pass of operations includes computing motion vectors for at least one frame in the set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame. The first pass of operations includes determining a motion cost value for at least one frame in the set of successive frames.

The first pass of operations includes determining a derived cost value based on the motion cost value for at least one frame in the set of successive frames. The first pass of operations includes determining a number of bidirectional motion compensated (B) frames to be encoded in the set of successive frames based on the derived cost value. The computer program includes a set of instructions for performing a second pass of operations on the set of successive frames. The second pass of operations includes encoding the determined number of frames in the set of successive frames as B-frames by using at least one motion vector computed in the first pass of operations.

Applicants respectfully submit that Zhao does not disclose, teach, or suggest the computer readable medium of claim 25. Specifically, Zhao do not describe a method that determines a number of B-frames for a sequence of frames by using motion vectors that are only based on a particular frame and a preceding frame. In the Office Action, the Examiner cites several sections of Zhao as describing the claimed method. However, these cited sections of Zhao merely describe a method that encodes a sequence of frames by analyzing each frame in the sequence of frames to determine whether to encode the frame as an I, P or B frame. *See* Zhao, column 2, lines 16-24; *see* also column 11, lines 30-57; *see* also Figures 17 and 18.

The cited sections of Zhao do not describe computing only motion vectors for P-frames and computing a number of B-frames based only on the motion vectors for the P-frames.

In contrast, claim25 recites a computer readable medium that stores a computer program that includes a set of instructions for performing a first pass of operations that includes (a) computing motion vectors for at least one frame in a set of successive frames, where the computed motion vectors for each particular frame are based only on the particular frame and a preceding frame, and (b) determining a number of bidirectional motion compensated (B) frames to be encoded in the set of successive frames based on the derived cost value.

Thus, the cited reference does not render claim 25 unpatentable under 35 U.S.C. § 102. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the § 102 rejection of claim 25.

VI. Rejection of claim 29 under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claim 29 under 35 U.S.C. § 103 as being unpatentable over Zhao in view of Divakaran. Claim 29 recites a computer readable medium storing a computer program for detecting scene cuts in a video sequence that includes several frames. The computer program is executable by at least one processor. The computer program includes a set of instructions for computing motion vectors for a first frame and a second frame in the several frames. The computer program includes a set of instructions for determining a motion cost value for the computed motion vectors of the first frame and the second frame. The computer program includes a set of instructions for determining a ratio between the motion cost value for the computed motion vectors of the first frame and the motion cost value for the computed motion vectors of the second frame. The computer program includes a set of instructions for determining if there is a scene cut between the first frame and the second frame based on the ratio.

Applicants respectfully submit that Zhao, Divakaran or their combination does not disclose, teach, or suggest the computer readable medium of claim 29. Specifically, Zhao, Divakaran or their combination does not disclose a computer readable medium that stores a computer program that includes a set of instructions for (a) determining a motion cost value for computed motion vectors of a first frame and a second frame, and (b) determining if there is a scene cut between the first frame and the second frame based on a ratio, as recited in claim 29.

In the Office Action, the Examiner cites several paragraphs of Zhao and Divakaran as describing the claimed method. However, the cited paragraphs of Zhao merely describe a

method of determining a scene cut by looking at motion activity of two frames. *See* Zhao, column 30, lines 32-39. *Zhao defines motion activity as a measure of the luminance of a frame*. *See* Zhao, column 15, lines 28-30. Zhao does not define motion activity to mean anything else. Thus, Zhao does not describe a method that determines a scene cut by looking at costs associated with motion vectors.

The cited paragraphs of Divakaran describe a method of determining a scene cut by looking at the *number* of frames that do not have motion vectors and the total *number* of frames. *See* Divakaran, column 7, line 33 to column 8, line 23. Divakaran does not describe determining a scene cut based on motion cost values for motion vectors. In addition, neither reference describes a ratio that is based on motion cost values for motion vectors.

Moreover, Applicants respectfully submit that the Examiner has not provided any proper motivation or suggestion to combine the two cited references.

Thus, the cited references does not render claim 29 unpatentable under 35 U.S.C. § 103. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the § 103 rejection of claim 29.

VII. Allowable Claims 6-7, 12-13, 18-20, 24 and 27-28

In the Office Action, the Examiner objected to claims 6-7, 12-13, 18-20, 24 and 27-28 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank the Examiner for the allowances. Applicants have rewritten claims 6, 12, 18, 24 and 27 in independent form including all of the limitations of the base claim. Claims 7, 13, 19-20 and 28 are dependent directly or indirectly off one of the above allowed claims. In view of the foregoing, Applicants request reconsideration of allowable dependent 6-7, 12-13, 18-20, 24 and 27-28.

VIII. New Claims 31-57

In this Amendment, Applicants have added claims 31-57. Applicants respectfully submit that claims 31-57 are fully supported by the specification and are patentable over Zhao and Divakaran. Accordingly, Applicants respectfully submit that claims 31-57 are in condition for allowance.

CONCLUSION

In view of the foregoing, it is submitted that the claims, namely claims 1-8, 12-25, 27-29 and 31-57, are in condition for allowance. Allowance is earnestly solicited at the earliest possible date.

Applicants petition the Commissioner for Patents under 37 C.F.R. § 1.136(a) to extend the time for submitting the response to an Office Action dated 01/23/2007. This extension will extend the time the response is due from 04/23/2007 to 05/23/2007.

Respectfully submitted,
ADELI LAW GROUP PLC

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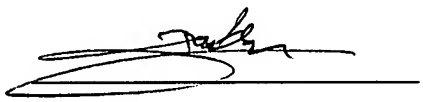

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